

REMARKS

The Office Action of November 19, 2002 and the references cited therein have been carefully considered.

In this Amendment, claim 4 has been amended to overcome the Examiner's formal objection thereto, and all of the claims have been amended to even more clearly and particularly define the invention. More specifically, each of the independent claims has been amended to specifically recite that the two-dimensional coded information is directly applied to a surface of either the chip, the lead frame or the resin package, i.e., no intermediary or label is utilized.

Additionally, a new claim 22, dependent on claim 7, has been added to specifically recite that the coded information provided on the lead frame is printed information provided by laser printer. A check in payment of \$18.00 for one additional dependent claim is attached.

In view of the amendment to claim 4 to change "ships" to "chips", it is submitted that the objection to claims 4-6 has clearly been overcome and should be withdrawn.

Reconsideration of the rejection of claims 1-21 under 35 U.S.C. 103(a) as being unpatentable over the patent to Shamir in view of the patent to Wang, et al is respectfully requested. In urging this ground of rejection, the Examiner has essentially taken the position that the Shamir patent teaches or renders obvious each of the features recited in the claims, but does not disclose a two-dimensional bar code or other two-dimensional code for the information; that the Wang, et al patent teaches that two-dimensional codes are known in the art, and that consequently, it would be obvious to one skilled in the art to apply a two-dimensional code as taught by Wang, et al on the labels of Shamir subsequently affixed to the chips or devices, and thus arrive at applicant's invention. This conclusion by the Examiner is respectfully traversed.

That is, it is submitted that there is nothing in either of the references which would suggest or make it obvious to one skilled in the art to combine these references in the manner suggested by the Examiner except possibly through the use of hindsight in the light of applicant's invention.

Moreover, it is submitted that even if the teachings of the two references are combined, the result would not be the invention defined in any of the independent claims 1, 4, 7, 11, 14 and 16.

As indicated above, each of the independent claims has been amended to positively recite that the two-dimensional coded information is directly provided on a surface of the respective article, i.e., chip, lead frame or resin encapsulation.

The primary reference to Shamir discloses an arrangement wherein a label containing identifying information in the form of a conventional single dimensional bar code is placed on the device. In particular, Shamir shows a micro label 46 having a bar code is affixed to the top surface 42 of an individual die 44 as shown in Figs. 1 and 2, or a micro label 122 having a bar code is provided on the top surface 124 of an encapsulation 126 as shown in Fig. 8. Initially, according to the Shamir patent, only a one-dimensional bar code is disclosed as recognized by the Examiner. As previously submitted, while Shamir does recognize that it may be necessary or desirable to have more information than that which can be placed on a single micro label, the solution to this problem according to Shamir is to provide a plurality of micro labels containing the additional information. There is no teaching or suggestion or any recognition in Shamir that if it is desired to provide more information than can be provided on a single micro label with a one-dimensional bar code, that an additional coding system which can provide more information, in particular a two-dimensional bar code pattern consisting of a plurality of blocks located in a desired region of two dimensions, could be placed on a single bar code micro label, and thus

minimize the space required for the additional information. Thus, it is submitted that contrary to the position taken by the Examiner, one skilled in the art would not look to a teaching such as the Wang, et al reference in order to provide the additional information by utilizing a two-dimensional bar code or matrix code arrangement since there is no teaching in either patent which would lead to this combination.

Additionally, as pointed out above, each of the independent claims has been amended to positively recite that the two-dimensional code pattern is directly applied or provided on a surface of the chip, lead frame or resin encapsulation package, respectively. Such is clearly not the case according to the teachings of the Shamir patent wherein all of the coded information is applied indirectly, i.e., via micro label. There is no teaching or suggestion in this patent that anything other than a micro label should be used to apply the data. On the other hand, according to claims 1, 7, 11 and 14, a two-dimensional code pattern is formed directly on the surface of a semiconductor chip or encapsulate, for example, via exposure using a liquid crystal mask (claim 3) or printed on an outer surface of the resin. With this arrangement according to the invention, not only can a great deal of information be recorded within a very limited space, but moreover, changes and/or peeling off of the code pattern with age is reduced so that the information recorded as a two dimensional code pattern can be reliably read out and utilized. Moreover, there is nothing the Shamir patent which in any way provides any type of data on the peripheral region of a lead frame as required by claims 4 and 14. Note that as a result of this sufficient amount of data on the exterior region of the lead frame, the code pattern can be easily recognized and, for example, a wiring pattern to be bonded can be easily changed based on the read data. In any case, there is nothing in the Shamir patent which teaches directly applying any type of

pattern directly to a surface of the device, but rather only teaches the use of a micro label for this purpose.

In order to attempt to overcome the deficiency of the Shamir patent, in particular the lack of a two-dimensional code pattern, the Examiner has cited the Wang et al patent. This patent does disclose that a one-dimensional bar code, a two-dimensional code or a matrix code can be used as a data form 20 and illustrates a matrix code 66 and a bar code 68 in Fig. 4 as an example. However, this patent only discloses that the data form 20 is applied to a card 22 and there is nothing in this reference which teaches providing such a data pattern on a semiconductor chip or a semiconductor device. Moreover, there is nothing in this patent which teaches or discloses that a two-dimensional code pattern should be provided on a semiconductor chip or a semiconductor device directly onto a surface thereof, for example by exposing and/or printing as mentioned above. In summary, while the reference may teach that various forms of recording or applying data are known, it does not teach, suggest or make obvious the application of two-dimensional code patterns directly to either a surface of a semiconductor wafer, a surface of a resin encapsulation, or an exterior portion of a lead frame, and thus does not overcome the basic deficiencies of the Shamir patent.

Moreover, even if one were to apply the general teaching of using a two-dimensional code pattern as taught by Wang, et al to increase the information content, when combined with the Shamir patent, this would result in a micro label containing such a two-dimensional pattern, and not the application thereof directly to a surface of the device, a lead frame or the encapsulation of a semiconductor device. Accordingly, for the above stated reasons, it is



submitted that each of claims 1-21 is allowable over the combination of the Shamir and Wang, et al patents under 35 U.S.C. 103.

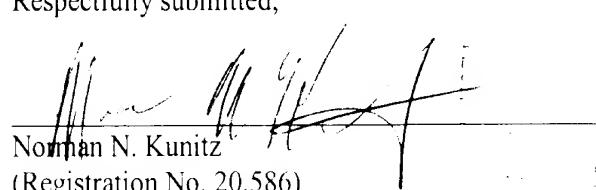
Newly presented claim 22 is dependent on claim 7 and specifically recites that the two-dimensional code pattern is applied to the surface of the resin encapsulate using laser printing. Again, such is not the case according to Shamir which teaches the application of printed micro labels to the devices rather than a direct application of any coded information. Accordingly, for this additional reason, as well as the reasons discussed above with regard to claim 7, it is submitted that claim 22 is allowable over the cited combination of references.

A request for the necessary extension in the period for filing this response, as well as a check in payment of the applicable extension fee are attached.

In view of the above, it is submitted that all of the pending claims, i.e., claims 1-22, are allowable over the prior art of record and are in condition for allowance. Such action and the passing of this application to issue therefore are respectfully requested.

If the Examiner is of the opinion that the prosecution of this application would be advanced by a further interview, the Examiner is invited to telephone undersigned counsel to arrange for such an interview.

Respectfully submitted,


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